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The Relevant Factors in Promoting Reading Activities in Elementary Schools

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Article Info	ABSTRACT
	In order to help students absorb knowledge, schools often conduct reading activities. Thorough planning and strategies, however, are needed to insure the effect of reading promotions, and make them a deeply-rooted part of life. This study adopted the analytic hierarchy process (AHP) to discuss the relevant factors in promoting reading activities in elementary schools, as well as how the reading activities should be pushed forward to increase students' interest in reading and help them form good reading habits. The results showed that there are three key success factors in promoting reading activities: (1) teachers' emphasis on and implementation of reading activities; (2) the reading habits of parents and other family members; (3) teachers' professional knowledge and skills in guiding the students to read.

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1. INTRODUCTION

Reading underlines two key factors: reading ability and reading habit. Due to the numerous media available today, getting information has become easy. As a result, our habit of reading has gradually faded away. Reading is not only a main channel of obtaining knowledge, but is also an excellent leisure activity. How to form the habit of reading at a young age is an important issue.

Although the syllabus of Chinese courses in Taiwan explicitly states that the teaching of Chinese should be focused around reading [1], the average score of Taiwanese students' reading literacy has been down in recent years, from 16th in 2006 to 23rd in 2009 worldwide. This is far behind Shanghai, Korea, Hong Kong, Singapore, and Japan, which ranks 1st, 2nd, 4th, 5th, and 8th, respectively [2].

The percentage of Taiwanese students who read extracurricular books due to person interest is just 24%, which is much lower than the international average of 40% [3]. Regarding the promotion of reading activities, schools must find absolutely effective methods to guide students' reading. Therefore, the aim of this study is focused on the following two aspects:
(1) Clarification of success factors in promoting reading activities in elementary schools.
(2) Analysis of the importance degree of the success factors in promoting reading activities in elementary schools.

2. LITERATURE REVIEW

Reading is an important channel to convey thoughts. It is a complicated cognition process that requires skills. A reader must use previous experience and knowledge, and combine words with pictures to

comprehend the contents. While reading, one must utilize intelligence, fluent reading ability, and common sense to form reading comprehension capabilities and absorb reading contents, meaning internalization [4]. Reading is not only a basic ability of the civilized world, but is also a necessary ability. Only with this ability, can one absorb the knowledge needed in the vast ocean of knowledge [5]-[7]. The successful promotion of reading activities lies in whether schools can stipulate specific educational policies. Schools must create an overall plan, which is then pushed forward by teachers and parents with concerted efforts; in this way reading penetrates into daily life [8]. Regarding the strategies for the promotion of schoolchildren's reading, most elementary schools in Taiwan have started to emphasize reading activities and know the importance of reading. Regarding whether reading activity promotions can be successful, the following four factors must be discussed:

(1) Schools: The collection of school libraries has a direct impact on the faculty and students' willingness to read. However, schools' promotion of reading activities no longer depends on increased library collections or reading time. By stipulating incentive measures, schools can enhance students' motives to read and help them form the habit of reading. Schools are no longer simply about infusing knowledge in classrooms. It is important to cultivate students' curiosity, as well as the ability and habit to seek knowledge. Therefore, in order to enhance children's interest and capability in reading, schools must start to push a series of activities and strategies related to reading.Wigfield [9] suggested that reading is an important basis and indispensable tool, and fluency of reading determines whether one can successfully learn during school education. Reading is no doubt the most essential means to seek knowledge. Students' reading performance is an important indicator of schools' effectiveness.

(2) Teachers: Teachers should use various reading activities to guide students' reading and cultivate their interest in reading. Students' learning of different reading skills must also be guided. During reading activity promotions in class, teachers often forget about their role in guiding, thus, it is difficult to improve both quality and quantity during reading activities [10]. Students' lack of motivation and interest in reading, without doubt, is another obstacle for teachers to overcome when promoting reading. Gambrell [11] underlined that teachers, and the environment they create in class, are beneficial to students' reading behaviors and habits. The most frequent places for children to borrow books are often the book corners in classrooms, rather than from community or school libraries. Children's favorite books are also from class book corners.

(3) Families: The first step in training children to read is to arouse their interest. The family environment plays a crucial role in the formation of children's reading habits [12]. To seize the best timing for students' reading, one must start with what they are most interested in. Teachers and parents should listen to children and know what is most important in children's eyes. In order to enter a child's world and talk with them, one must firstunderstand their thoughts [13]. Rasinski [14] pointed out that, if the parents have the habit of reading books or newspapers, their children will have more interest in reading activities. If the parents can encourage and guide children to read, as well as provide good reading environments and resources, the children can have significant progress in reading attitude and understanding. If the students already have ample reading activities before they go to school, like reading books and telling stories, they can have higher scores in reading. Regarding book resources, children's books at home also play a role. For example, students who have over 100 children's book can have 90 points of higher scores than those with less than 10 books [15].

(4) Peers: Students' reading attitude and reading literacy are important factors affecting their reading habits. When students have stronger reading interest and better reading behaviors, their school performance tend to be better. In the same way, the more independent reading actions in class, the better school performance. Reading attitude impacts one's willingness to read, and to read continuously. Students' reading attitude is positively related to their academic achievement and writing performance [16]. During students' growing process, peers play an important role. Their influence, which becomes increasingly important, is no less than that of parents or teachers. Peers' reading behavior or attitude naturally has an impact on children's reading. They not only observe and follow their peers' reading behavior, but also gain feedback through reading discussions as well. As a result, they are more willing to engage in reading activities, which has positive impact on children's reading behavior and motivation. Moreover, children can get more book information from their peers [5].

3.   RESEARCH METHOD

This study aims to discuss the key success factors in promoting reading activities in elementary schools. Literature analysis and the Delphi method were adopted to discuss the indices of key success factors in promoting reading activities in elementary schools in Taiwan. Analytic hierarchy process (AHP) was applied to clarify the importance of the key success factors in promoting reading activities.

3.1. Research tools

1) Delphi questionnaire

The questionnaire was designed to determine the key success factors in promoting reading activities in elementary schools. The Delphi questionnaire was used to collect expert opinions in a reasonable and objective manner. The subjects were the educational inspectors, principles, directors, and teachers engaged in the promotion of reading activities, as well as reading education.

The Delphi questionnaire requires experts to use evaluation criteria to give a score of 1-5 for each of the key success factors in promoting reading activities, as based on their importance and relevance. It is designed as a half closed questionnaire with a column for "other suggestions". To provide reference for improvement of this research, the experts provide relevant suggestions and opinions regarding criteria amendments in this column.Three rounds of questionnaire survey were held. The key success factors were identified as shown in Table 1.

Table 1.The hierarchy of factors in successful reading promotion activities

Goal	Main Evaluation Criteria	Secondary Evaluation Criteria
Key factors in successfully Promoting reading activities in elementary schools	School facilities and policies to promote reading	- Formulation of effective incentives (certificate of merit, book gifts, book coupons). - Drawing up plans and strategies for promoting reading - Holding reading-related activities and competitions (writing,publication of book review) - Increased library collection - Enrichment of reading software and hardware facilities in reading environment - Listing reading activities into school curriculum (morning reading, reading course).
	Teachers' reading teaching, professional knowledge and skills	- Teachers' emphasis on and implementation of reading activities - Teachers' professional knowledge, skills, and strategies in guiding students' reading - Teachers' recommendation of good books and provision of reading resources and information - Teachers' sharing of reading experience and guiding students to write book reviews - Teachers' ability in creating reading environments and arranging a book corner in the classroom
	Family's role in promoting reading	- Reading habits of parents or other family members (proactive, fixed) - Subscription to suitable books, newspapers, and magazines - Good reading environment (light, facilities, books) - Family' s cultural background (language, religious belief) - Reduction of access to internet and digital products (smartphone, tablet, TV, computers) - Family's reading activities (reading together, reading party)
	One' reading behavior and that of peers	- Interaction of reading behaviors with peers (recommendation, invitation) - One's own reading behavior (read for one's own need) - Gratification and fulfillment gained from reading (read for recognition) - Self-confidence in reading ability (Chinese level, comprehending ability) - Interest in reading activities (read for interest)

2) AHP questionnaire

AHP provides a framework for analyzing questions. It basically layers complicated and nonstructural questions in hierarchical attributes, and gives a score to the relative weight of each attribute, as based on subjective judgments. It synthetically judges and determines which layer has the highest priority [18]-[22]. To obtain the importance degree of the key success factors in promoting reading activities in elementary schools, this research covers a total of 20 respondents, including 2 school inspectors, 2 principals, 4 directors, and 12 teachers. Steps of hierarchy analysis are specified, as follows:

(1) Establish pairwise comparison matrix

Suppose that a certain layer contains elements $A_1, A_2, A_3, A_4, \ldots\ldots A_n$, which weights are $W_1, W_2, W_3, \ldots\ldots W_n$, respectively, to establish the pairwise comparison matrix. The relative

importance between any two arbitrary elements A_i and A_j is represented as a_{ij}, while the pairwise comparison matrix of elements $A_1, A_2, A_3, A_4, \ldots\ldots A_n$ is $A = [a_{ij}]$. If the weights of $W_1, W_2, W_3, \ldots\ldots W_n$ are known, the pairwise comparison matrix $A = [a_{ij}]$ can be expressed, as in Eq. (1)

$$A = [a_{ij}] = \begin{bmatrix} W_1/W_1 & W_1/W_2 & \ldots. & W_1/Wn \\ W_2/W_1 & W_2/W_2 & \ldots. & W_2/W_n \\ . & . & \ldots. & . \\ W_n/W_1 & W_n/W_2 & \ldots. & W_n/W_n \end{bmatrix} \tag{1}$$

Where $a_{ij} = W_i/W_j$, $a_{ji} = W_j/W_i$, i, j=1,2,……,n

(2) Obtain maximum eigenvector and eigenvalue

According to the pairwise comparison matrix, eigenvector and weight allocations corresponding to the maximum eigenvalue can be obtained. Multiply pairwise comparison matrix A by each criterion weight, then vector quantity $\overline{W}$ can be shown, as in Eq. (2).

$$\overline{W} = (W_1, W_2, W_3, \ldots\ldots W_n)^T$$

$$A\overline{W} = \begin{bmatrix} W_1/W_1 & W_1/W_2 & \ldots. & W_1/W_n \\ W_2/W_1 & W_2/W_2 & \ldots. & W_2/W_n \\ . & . & \ldots. & . \\ W_n/W_1 & W_n/W_2 & \ldots. & W_n/W_n \end{bmatrix} \begin{bmatrix} W_1 \\ W_2 \\ . \\ W_n \end{bmatrix} = \lambda \begin{bmatrix} W_1 \\ W_2 \\ . \\ W_n \end{bmatrix} \tag{2}$$

Eq. (2) represents that the value of pairwise comparison matrix A, multiplied by $\overline{W}$, equals that of λ multiplied by $\overline{W}$, which means $A\overline{W} = \lambda\overline{W}$. Thus, λ is the eigenvalue of A, and the eigenvector of the eigenvalue corresponding to pairwise comparison matrix A.

As a_{ij} is obtained by subjective judgment, it must vary a little from the actual value of W_i/W_j in the actual pairwise comparison. As a result, $a_{ij} \approx W_i/W_j$. When a_{ij} changes slightly, the eigenvalue will change accordingly. When the eigenvalue no longer equals λ, then λ remains the main eigenvalue and is very close to the eigenvalue of the theoretical weight. This means λ_{max} replaces λ, as shown in Eq. (3).

$$A\overline{W} = \lambda_{max} \times \overline{W} \tag{3}$$

Steps of calculating the maximum eigenvalue are, as follows. Multiply pairwise comparison matrix A by eigenvector $\overline{W}$, which has already been obtained, to get a new vector $\overline{W}'$, as shown in Eqs. (4) and (5).

$$A\overline{W} = \overline{W}' \tag{4}$$

$$\begin{bmatrix} W_1/W_1 & W_1/W_2 & \dots & W_1/W_n \\ W_2/W_1 & W_2/W_2 & \dots & W_2/W_n \\ . & . & \dots & . \\ W_n/W_1 & W_n/W_2 & \dots & W_n/W_n \end{bmatrix} \begin{bmatrix} W_1 \\ W_2 \\ . \\ W_n \end{bmatrix} = \begin{bmatrix} W_{1'} \\ W_{2'} \\ . \\ W_{n'} \end{bmatrix} \tag{5}$$

Divide every known vector by every original vector. Then, add up all the results to calculate the arithmetic mean value, thus, λ max is acquired, as shown in Eq. (6).

$$\lambda_{\max} = \frac{1}{n} \left(\frac{W_1}{W_1} + \frac{W_2}{W_2} + \dots + \frac{W_n'}{W_n} \right) \tag{6}$$

(3) Conduct consistency testing

It is difficult to require respondents' consistency in pairwise comparisons, thus, consistency test is needed to acquire the consistency index (C.I.), through which the consistency of the pairwise comparison matrix, as constituted by the respondents' answers, can be checked. According to Saaty's [21] suggestions, C.I.=0 means that the judgments of the evaluators are consistent from the beginning to the end, while C.I. $\leqq 0.1$ means that the error value is acceptable. In this way, consistency can be ensured, as shown in Eq. (7).

(a)   Consistency Index (C.I.)

$$\text{C.I.} = \frac{\lambda_{\max} - \lambda}{n-1} \tag{7}$$

(b)   Consistency Ratio (C.R.)

The consistency index created under different layers of the positive reciprocal matrix, as obtained from evaluation criterion 1-9, is a random index (R.I.) [21]. Under the matrix of the same layer, the ratio of the C.I. value and the R.I. value is called the consistency ratio (C.R.), which means C.R. = C.I. / C.R., as shown in Eq. (8). Saaty [21] suggested that if C.R. $\leqq 0.1$, consistency is within the acceptable level.

$$\text{C.R.} = \frac{C.I}{R.I} \tag{8}$$

4.   RESULTS

Through the Delphi method and AHP, this study analyzed the key success factors in promoting reading activities in elementary schools, as seen from the perspective of front-line educators. During the process of AHP pairwise comparison, transitivity of quality and intensity must be ensured [21]-[23]. As errors are inevitable in the actual process due to certain factors, consistency testing is required, thus, Satty [21] advised testing consistency by the consistence index (C.I.) and consistence ratio (C.R.). The results of consistency testing are as shown in Table 2.

Table 2. Results of consistency testing

Goal	Main Evaluation Criteria	C.I.	C.R.	Secondary Evaluation Criteria	C.I.	C.R.
Key factors in successfully Promoting reading activities in elementary schools	School facilities and policies to promote reading	0.050	0.056	Formulation of effective incentives (certificate of merit, book gifts, book coupons). Drawing up plans and strategies for promoting reading	0.089	0.072
				Holding reading-related activities and competitions (writing, publication of book review) Increased library collection		
				Enrichment of reading software and hardware facilities in reading environment Listing reading activities into school curriculum (morning reading, reading course).		
	Teachers' reading teaching, professional knowledge and skills			Teachers' emphasis on and implementation of reading activities Teachers' professional knowledge, skills, and strategies in guiding students' reading Teachers' recommendation of good books and provision of reading resources and information Teachers' sharing of reading experience and guiding students to write book reviews Teachers' ability in creating reading environments and arranging a book corner in the classroom	0.035	0.031
	Family's role in promoting reading			Reading habits of parents or other family members (proactive, fixed) Subscription to suitable books, newspapers, and magazines Good reading environment (light, facilities, books)	0.037	0.030
				Family' s cultural background (language, religious belief) Reduction of access to internet and digital products (smartphone, tablet, TV, computers) Family's reading activities (reading together, reading party)		
	One' reading behavior and that of peers			Interaction of reading behaviors with peers (recommendation, invitation) One's own reading behavior (read for one's own need)	0.079	0.070
				Gratification and fulfillment gained from reading (read for recognition) Self-confidence in reading ability (Chinese level, comprehending ability) Interest in reading activities (read for interest)		

The ranking of overall weighted value and importance is as shown in Table 3. The influential weights of the four main dimensions are ranked as follows:

(1)   Teachers' reading teaching, professional knowledge, and skills
(2)   School facilities and policies to promote reading
(3)   Family's role in promoting reading
(4)   One' reading behavior, as well as that of peers

Table 3. The relative weights of the criteria in the model, and ranking of the weights of all criteria in the model

Goal	Main Evaluation Criteria	Weight	Ranking	Secondary Evaluation Criteria	Layer Weight	Ranking
Key factors in successfully Promoting reading activities in elementary schools	School facilities and policies to promote reading	0.294	2	Formulation of effective incentives (certificate of merit, book gifts, book coupons).	0.242	1
				Drawing up plans and strategies for promoting reading	0.172	3
				Holding reading-related activities and competitions (writing, publication of book review)	0.145	4
				Increased library collection	0.137	5
				Enrichment of reading software and hardware facilities in reading environment	0.126	6
				Listing reading activities into school curriculum (morning reading, reading course).	0.178	2
	Teachers' reading teaching, professional knowledge and skills	0.338	1	Teachers' emphasis on and implementation of reading activities	0.360	1
				Teachers' professional knowledge, skills, and strategies in guiding students' reading	0.239	2
				Teachers' recommendation of good books and provision of reading resources and information	0.124	5
				Teachers' sharing of reading experience and guiding students to write book reviews	0.147	3
				Teachers' ability in creating reading environments and arranging a book corner in the classroom	0.130	4
	Family's role in promoting reading	0.221	3	Reading habits of parents or other family members (proactive, fixed)	0.317	1
				Subscription to suitable books, newspapers, and magazines	0.148	4
				Good reading environment (light, facilities, books)	0.164	2
				Family' s cultural background (language, religious belief)	0.102	6
				Reduction of access to internet and digital products (smartphone, tablet, TV, computers)	0.119	5
				Family's reading activities (reading together, reading party)	0.151	3
	One' reading behavior and that of peers	0.147	4	Interaction of reading behaviors with peers (recommendation, invitation)	0.269	1
				One's own reading behavior (read for one's own need)	0.190	3
				Gratification and fulfillment gained from reading (read for recognition)	0.224	2
				Self-confidence in reading ability (Chinese level, comprehending ability)	0.140	5
				Interest in reading activities (read for interest)	0.176	4

The overall weighted values of key success factors in promoting reading activities in elementary schools are as shown in Table 4. The first 10 factors are ranked based on their importance as follows:

(1)   Teachers' emphasis on and implementation of reading activities
(2)   Reading habits of parents or other family members (proactive, fixed)
(3)   Teachers' professional knowledge, skills, and strategies in guiding students' reading
(4)   Formulation of effective incentives (certificate of merit, book gifts, book coupons).
(5)   Good reading environment (light, facilities, books)
(6)   Listing reading activities into school curriculum (morning reading, reading course).
(7)   Drawing up plans and strategies for promoting reading
(8)   Teachers' sharing of reading experience and guiding students to write book reviews
(9)   Family's reading activities (reading together, reading party)
(10) Subscriptions to suitable books, newspapers, and magazines

Table 4. Importance ranking of minor evaluation criteria

Evaluation Criteria	Weight	Ranking
Teachers' professional knowledge, skills, and strategies in guiding students' reading	0.11161	1
Reading habits of parents or other family members (proactive, fixed)	0.09506	2
Teachers' professional knowledge, skills, and strategies in guiding students' reading	0.07412	3
Formulation of effective incentives (certificate of merit, book gifts, book coupons).	0.06631	4
Good reading environment (light, facilities, books)	0.04913	5
Listing reading activities into school curriculum (morning reading, reading course).	0.04867	6
Drawing up plans and strategies for promoting reading	0.04724	7
Teachers' sharing of reading experience and guiding students to write book reviews	0.04565	8
Family's reading activities (reading together, reading party)	0.04536	9
Subscription to suitable books, newspapers, and magazines	0.04435	10
Teachers' ability in creating reading environments and arranging a book corner in the classroom	0.04033	11
Holding reading-related activities and competitions (writing, publication of book review)	0.03971	12
Teachers' recommendation of good books and provision of reading resources and information	0.03829	13
Increased library collection	0.03765	14
Reduction of access to internet and digital products (smartphone, tablet, TV, computers)	0.03565	15
Enrichment of reading software and hardware facilities in reading environment	0.03443	16
Interaction of reading behaviors with peers (recommendation, invitation)	0.03126	17
Family's cultural background (language, religious belief)	0.03046	18
Gratification and fulfillment gained from reading (read for recognition)	0.02596	19
One's own reading behavior (read for one's own need)	0.02205	20
Interest in reading activities (read for interest)	0.02046	21
Self-confidence in reading ability (Chinese level, comprehending ability)	0.01627	22

5. CONCLUSION

Reading ability is one of the most crucial factors in the learning process. Reading is the basis where all learning starts. Therefore, the ability to read affects not only schoolchildren's study, but also affects overall national competitiveness. It is definitely a link that should never be neglected in elementary education and national development. The research results are as follows:

There are four key success factors in promoting reading activities in elementary schools: (1) school facilities and policies to promote reading; (2) teachers' reading teaching, as well as professional knowledge and skills; (3) family's role in promoting reading; (4) one's reading behavior and that of peers. There were 22 secondary factors analyzed. With the help and participation of experts, this study ranked the key factors affecting reading activity promotions to provide reference for elementary schools in promoting reading. It expects that reading activities in elementary schools can be conducted more effectively and take root, and as a result, schoolchildren can show extraordinary talents in international reading ratings.

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